

CLAIMS

- 5 *See
a1)* 1. An interbody fusion spacer, comprising:
an elongated body defining a chamber, said body having a
first arm and a second opposing arm, said arms defining an opening in
communication with said chamber, each of said arms having an end
configured to form a region within which an adjacent spacer can nest.
- 10 2. The spacer of claim 1, wherein said body further comprises a
tool engaging end defining a tool engaging hole for receiving a driving tool
for implanting the spacer.
- 15 3. The spacer of claim 1, wherein said elongated body is
comprised of a porous material.
4. The spacer of claim 1, wherein said porous material is bone.
5. The spacer of claim 4, wherein said bone is cortical bone.
- 20 6. The spacer of claim 4, wherein said bone is obtained as a
transverse cut from the diaphysis of a long bone having a medullary canal.
- 25 7. The spacer of claim 1, wherein said body has an outer
surface that defines threaded bone-engaging portions.
8. The spacer of claim 1, wherein each of said ends has a
concave surface extending to the outer edge of the spacer.
- 30 9. The spacer of claim 1, further comprising an osteogenic
material disposed within said channel.

10. The spacer of claim 9, wherein said osteogenic material comprises natural bone, demineralized bone, a calcium phosphate material, a bioceramic, bioglass, an osteoinductive factor and mixtures thereof.

11. The spacer of claim 9, wherein said osteogenic material comprises a bone morphogenetic protein.

12. The spacer of claim 11, wherein said bone morphogenetic protein comprises a recombinant protein.

13. The spacer of claim 12, wherein said recombinant bone morphogenetic protein comprises a human protein.

14. The spacer of claim 13, wherein said recombinant human protein comprises BMP-2, BMP-4 or heterodimers thereof.

15. The spacer of claim 1, wherein said ends of each of said arms has a surface configured to receive a convex surface of an adjacent spacer.

16. The spacer of claim 1, wherein said ends of each of said arms has a concave surface.

17. The spacer of claim 1, wherein said elongated body has a first maximum outer diameter and each of said arms of said elongated body are configured to form a region for nesting of an adjacent spacer having a second maximum outer diameter to form a spacer assembly having a width less than the sum of the combined maximum outer diameters.

18. The spacer of claim 8, which is formed of bone.

19. The spacer of claim 1, wherein said elongated body has a longitudinal axis and said chamber extends perpendicular to said longitudinal axis.

20. The spacer of claim 1, wherein each of said first arm and said second arm has an end having a concave surface.

21. An interbody fusion spacer, comprising:
an elongated body of bone having a longitudinal axis and defining a chamber extending perpendicular to said longitudinal axis of said body, said body of bone obtained as a transverse cut from the diaphysis of a long bone having a medullary canal, said body having a first arm and a second opposing arm, said arms defining an opening in communication with said chamber, each of said arms having an end with a concave surface that forms a region within which an adjacent spacer can nest.

22. The spacer of claim 21, wherein said body further comprises a tool engaging end defining a tool engaging hole for receiving a driving tool for implanting the spacer.

23. An interbody fusion implant system, comprising:
a first interbody fusion spacer having a first elongated body of bone defining a first chamber, said body having a first arm and a second opposing arm, said first and said second arms defining a first opening in communication with said first chamber, each of said arms having an end configured to form a region within which an adjacent spacer can nest; and
a second interbody fusion spacer having a second elongated body of bone and an outer surface, said second interbody fusion spacer nestable within said first interbody fusion spacer.

24. The system of claim 23, wherein said second elongated body defines a through-hole.

25. The system of claim 24, wherein said second elongated body has a longitudinal axis and said through-hole extends perpendicular to said longitudinal axis.

26. The system of claim 23, wherein said second elongated body defines a second chamber, said second body having a third arm and a fourth opposing arm, said third and fourth arms defining a second opening in communication with said second chamber, said second interbody fusion spacer nestable within said first interbody fusion spacer.

27. The system of claim 26, said system further comprising an osteogenic material disposed in at least one of said chambers of said spacers.

28. A method of promoting fusion bone growth in the space between adjacent vertebrae, comprising:

(a) providing a first elongated body defining a first chamber, said body having a first arm and a second opposing arm, said first and second arms defining a first opening in communication with said first chamber, each of said first and second arms having an end configured to form a region within which an adjacent spacer can nest;

(b) preparing said adjacent vertebrae to receive the first elongated body in an intervertebral space between adjacent vertebrae; and

(c) placing the first elongated body into the intervertebral space.

~~29~~ ~~30~~. The method of claim ~~29~~²⁸, further comprising packing osteogenic material into said first chamber of said first spacer prior to the placing step.

5 ~~30~~ ~~31~~. The method of claim ~~29~~²⁸, further comprising implanting a second spacer into the intervertebral space in a nested configuration within ends of said first and second arms of said first spacer.

10 ~~31~~ ~~32~~. The method of claim ~~29~~²⁸, further comprising implanting a second one of said spacers into the intervertebral space after the placing step and orienting the first and second spacers so that the channels of the spacers face each other.

15 ~~32~~ ~~33~~. The method of claim ~~31~~³⁰, wherein said second interbody fusion spacer is formed of bone.

~~33~~ ~~34~~. The system of claim ~~33~~³², wherein said second interbody fusion spacer defines a through-hole.

20 ~~34~~ ~~35~~. The system of claim ~~34~~³³, wherein said through-hole extends perpendicular to said longitudinal axis of said second elongated body.

~~35~~ ~~36~~. A spacer insertion tool, comprising:
a housing having a proximal end and an opposite distal end
25 and defining a passageway between said proximal end and said distal end;
a shaft having a first end and an opposite second end, said shaft disposed within said passageway with said first end adjacent said distal end, said first end defining a spacer engager; and
an occlusion member extendible from said distal end of said
30 housing for blocking an opening defined in the spacer when said spacer engager is engaged to the spacer, said occlusion member having a plate

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with an interior and exterior surface, at least one of said surfaces of said plate being curved.

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 ~~36~~ 37. The tool of claim ~~36~~³⁵, further comprising a fastener attached to said shaft and wherein said plate defines a groove, said groove disposed around said fastener so that said plate is slidable relative to said housing.

- 10 ³⁶
 ~~37~~ 38. The tool of claim ~~37~~³⁶, wherein said plate has a curved superior surface which approximates the outer surface of the spacer when said spacer engaging means is engaged to the spacer and said occlusion member is blocking the opening of the spacer.

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